

NOTES ON THE GENUS *CLERODENDRUM* (VERBENACEAE). XIX

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CLERODENDRUM Burm.

Additional bibliography: Baden-Powell, Handb. Econ. Prod. Punj. 1: 364. 1868; Aitchison, Cat. Pl. Punj. 121. 1869; Dutt, Mat. Med. Hind., ed. 1, 219 & 294. 1877; Backer, Tropische Natuur 5: 87--94. 1916; Buck & al., Bull. Torrey Bot. Club 112: 477. 1985; Mold., Phytologia 60: 128--152. 1986.

CLERODENDRUM HENRYI P'ei

Additional bibliography: Mold., Phytologia 60: 152. 1986.

This species is based on A. Henry 11585B [erroneously cited by P'ei as "11855B"] from Talang, Yunnan, China. P'ei (1932) comments that "The species is allied to *Clerodendron nutans* Wall. from which it differs by its much smaller flowers". He gives a very useful key for distinguishing the species of *Clerodendrum* known to him from China. It is reproduced here with some modifications and nomenclatural updating:

1. Corolla-tube short, not longer than 4 cm.
 2. Calyx-rim truncate or minutely toothed, the teeth not longer than 1 mm.
 3. Inflorescence usually consisting of simple, axillary, 3-flowered cymes; leaf-blades marginally entire..*C. inerme*.
 - 3a. Inflorescence consisting of terminal, many-flowered panicles; leaf-blades variously dentate or serrulate.
 4. Leaves plainly petiolate; panicles lax; bracts small, lanceolate, not more than 5 mm. long; ovary apically pubescent.....*C. subscaposum*.
 - 4a. Leaves sessile or very shortly petiolate; panicles dense; bracts large, foliaceous, ovate, about 5 cm. long, sometimes verticillate; ovary glabrous.....*C. serratum*.
 - 2a. Calyx distinctly lobed, the lobes to 1 cm. or more long.
5. Inflorescence terminal, composed of dense capitate cymes or lax many-flowered panicles.
 6. Inflorescence dense, composed of globose cymose heads; bracts foliaceous.
 7. Fruiting-calyx and bracts shorter than or as long as the fruit, with large peltate glands.
 8. Style longer than the stamens; bracts persistent; southern.....*C. philippinum*.
 - 8a. Style shorter than or as long as the stamens; bracts deciduous; northern.....*C. bungei*.
 - 7a. Fruiting-calyx and bracts much longer than the fruit, without peltate glands.....*C. canescens*.
 - 6a. Inflorescence loose, composed of lax cymes or elongated thyrsi; bracts small, linear.

9. Leaf-blades with numerous sand-like glands beneath.
10. Normal leaf-blades not lobed, marginally serrate or dentate; stamens 3 times as long as the corolla-tube.
11. Calyx and corolla usually red.....*C. japonicum*.
- 11a. Calyx and corolla usually creamy-white.....
C. japonicum f. *album*.
- 10a. Normal leaf-blades usually distinctly 3--7-lobed, the lobes marginally entire or minutely denticulate; stamens 4 times as long as the corolla-tube. *C. paniculatum*.
- 9a. Leaf-blades without sand-like glands beneath.
12. Corolla-tube short, not over 1 cm. long; flowers numerous
13. Leaf-blades densely pubescent, broadly ovate; calyx-lobes slender, elongate.....*C. mandarinorum*.
- 13a. Leaf-blades subglabrous, lanceolate-elliptic; calyx-lobes ovate.....*C. cyrtophyllum*.
- 12a. Corolla-tube elongate, to 3.5 cm. long; flowers few.
14. Leaf-blades elliptic-oblong to linear-oblong or lanceolate; bracts persistent.
15. Inflorescence pendulous, the axis usually 15--35.5 cm. long.
16. Leaves sessile or subsessile; petiole, if present, not over 13 mm. long.....*C. wallichii*.
- 16a. Leaves distinctly petiolate; petioles 2.5--5.5 cm. long
17. Leaf-blades linear-oblong, to 20 cm. long and 5 cm. wide; petioles 3--5.5 cm. long.....
C. longilimbus.
- 17a. Leaf-blades elliptic, usually not more than 10.5 cm. long and 5.5 cm. wide; petioles 1.5--3 cm. long.....*C. henryi*.
- 15a. Inflorescence erect, the axis not over 4 cm. long.
18. Leaf-blades subglabrous, ovate; flowers many; calyx green; corolla-tube not more than 2.5 cm. long.....*C. kwangtungense*.
- 18a. Leaf-blades densely pubescent on the midrib beneath, elliptic; flowers few; calyx red; corolla-tube 3.5 cm. long.....*C. griffithianum*.
- 14a. Leaf-blades ovate; bracts deciduous.
19. Sepals reddish; leaf-blades ovate, more or less pubescent.....*C. trichotomum*.
- 19a. Sepals greenish; leaf-blades ovate-lanceolate, subglabrous.....*C. trichotomum* var. *fargesii*.
- 5a. Inflorescence axillary, in few- or many-flowered cymes.
20. Calyx with peltate glands.....*C. colebrokianum*.
- 20a. Calyx without peltate glands.
21. Leaf-blades ovate, glabrous; petioles about 10 cm. long...
C. longipetiolatum.
- 21a. Leaf-blades lanceolate, pubescent, subsessile or with petioles not over 5 mm. long.....*C. fortunatum*.
- 1a. Corolla-tube to 10 cm. long.....*C. indicum*.

Ching describes *Clerodendrum henryi* as a "climber" with greenish fruit in August, and asserts that it is "common" at 3200 feet altitude in Kwangsi.

Citations: CHINA: Kwangsi: Ching 6724 (V--9392). Yunnan: A. Henry 11585 (N), 11585B (N--type, W--458496--isotype). MOUNTED ILLUSTRATIONS: P'ei, Mem. Sci. Soc. China 1 (3): pl. 27. 1932 (Ld--photo of type).

CLERODENDRUM HETEROPHYLLUM (Vent.) R. Br. in Ait., Hort. Kew., ed. 2, 4: 64. 1812.

Synonymy: *Volkameria heterophylla* Vent. ex Poir. in Lam., Encycl. Méth. Bot. 8: 687. 1808. *Volkameria foliis ovatis, lanceolatis. seu linearilanceolatis, integerrimis; fructo globoso* Vent. ex Poir. in Lam., Encycl. Méth. Bot. 8: 687 in syn. 1808. *Clerodendrum heterophyllum* Ait. ex Steud., Nom. Bot., ed. 1, 207. 1821. *Clerodendron heterophyllum* R. Br. ex Spreng. in L., Syst. Veg., ed. 16, 2: 758. 1825 [not *Clerodendron heterophyllum* Miq., 1980]. *Clerodendrum heterophyllum* H. K. ex Loud., Encycl. Pl. 522. 1829. *Clerodendrum lanceolatum* Wall., Numer. List 87, no. 1790C hyponym. 1831. *Clerodendron ligustrinum* Wall., Numer. List. 87, no. 1790C hyponym. 1831. *Clerodendrum heterophyllum* R. Br. ex Bojer, Hort. Maurit. 256. 1837. *Clerodendron heterophyllum* "[R. Br.] in Ait." apud Jacks. in Hook. f. & Jacks., Ind. Kew., imp. 1, 1: 561. 1893. *Volkameria heterophylla* Poir. apud Jacks. in Hook. f. & Jacks., Ind. Kew., imp. 1, 2: 1219 in syn. 1895. *Clerodendron heterophyllum* L. ex Hubert, Trav. Lab. Mat. Med. Fac. Pharm. Paris 13: 106. 1921. *Clerodendrum mauritanicum* Schum. ex Mold., Prelim. Alph. List Inv. Names 23 in syn. 1940. *Clerodendrum heterophyllum* (Poit.) R. Br. ex Mold., Alph. List Inv. Names 21 sphalm. 1942. *Clerodendron heterophyllum* Ait. ex Terrac., Trav. Lab. Mat. Med. 33 (3): 101. 1947. *Clerodendron lanceolatum* Wall. ex Mold., Fifth Summ. 2: 971 in syn. 1971 [not *Clerodendron lanceolatum* N. E. Br., 1959, nor Gürke, 1893]. *Clerodendron ligustrinum* Wall. ex Mold., Fifth Summ. 2: 971 in syn. 1971 [not *Clerodendron ligustrinum* R. Br., 1847, nor (Jacq.) Roem. & Schult., 1940, nor (Jacq.) R. Br., 1812]. *Clerodendron heterophyllum* Schau. ex Mold., Phytol. Mem. 2: 386 in syn. 1980.

Bibliography: Vent., Jard. Malm. 2: 71. 1804; Andr., Bot. Repos. 9: pl. 554. Dec. 1808; Poir. in Lam., Encycl. Méth. Bot. 8: 687--688. Aug. 1808; R. Br. in Ait., Hort. Kew., ed. 2, 4: 64 (1812) and 5: 464. 1812; Pers., Sp. Pl. 3: 364. 1819; Steud., Nom. Bot. Phan., ed. 1, 207 & 889. 1821; Spreng. in L., Syst. Veg., ed. 16, 2: 758. 1825; Sweet, Hort. Brit., ed. 1, 1: 322. 1826; Loud., Encycl. Pl. 522. 1829; Wall., Numer. List [49], no. 1790. 1829; Loud., Hort. Brit., ed. 1, 247. 1830; Sweet, Hort. Brit., ed. 2, 415. 1830; Wall., Numer. List 87, no. 1790C. 1831; Loud., Hort. Brit., ed. 2, 247. 1832; Bojer, Hort. Maurit. 256. 1837; D. Don in Loud., Hort. Brit., ed. 3, 247. 1839; D. Don in Sweet, Hort. Brit., ed. 3, 550. 1839; Steud., Nom. Bot. Phan., ed. 2, 1: 382. 1840; D. Dietr., Syn. Pl. 3: 615. 1843; Voigt, Hort. Suburb. Calc. 465. 1845; Schau. in A. DC., Prodr. 11: 657 & 660. 1847; Buek, Gen. Spec. Syn. Candoll. 3: 106 & 502. 1858; Bocq., Adansonia, ser. 1 [Baill., Rec. Obs. Bot.]

3: 214. 1863; J. G. Baker, Fl. Maurit. 254--255. 1877; Jacks. in Hook. f. & Jacks., Ind. Kew., imp. 1, 1: 561 (1893) and imp. 1, 2: 1219. 1895; Briq. in Engl. & Prantl, Nat. Pflanzenfam., ed. 1, 4 (3a): 175. 1895; Gerth van Wijk, Dict. Plantnames, imp. 1, 1: 335. 1911; Perrot & Hubert, Bull. Sci. Pharm. 21: 449. 1914; Perrot & Hubert, Chem. Centralbl. 2: 47. 1915; Gerth van Wijk, Dict. Plantnames, imp. 1, 2: 176, 177, & 619. 1916; R. N. Parker, For. Fl. Punjab, ed. 1, 403. 1918; Hubert, Trav. Lab. Mat. Méd. Fac. Pharm. Paris 13: [Verb. Util. Mat. Méd.] [57], 103--105, & 128, pl. 5, fig. 5--8. 1921; R. N. Parker, For. Fl. Punjab, ed. 2, 403. 1924; Wehmer, Pflanzenst. 2: 1025. 1931; Mold., Alph. List Comm. Vern. Names 5 & 14. 1939; Mold., Geogr. Distrib. Avicenn. 29 & 37. 1939; Mold., Prelim. Alph. List Inv. Names 23 & 53. 1940; Mold., Alph. List Inv. Names 21 & 56. 1942; Mold., Known Geogr. Distrib. Verbenac., ed. 1, 53, 69, 72, & 90. 1942; Mold., Phytologia 2: 99. 1945; Jacks. in Hook. f. & Jacks., Ind. Kew., imp. 2, 1: 561 (1946) and imp. 2, 2: 1219. 1946; Mold., Alph. List Cit. 1: 30, 43, 116, 224, 256, & 277. 1946; Mold., Alph. List Inv. Names Suppl. 1: 6 & 29. 1947; Terrac., Trav. Lab. Mat. Med. Ecole Sup. Pharm. Paris 33 (3): 101. 1947; Mold., Alph. List Cit. 2: 353, 355, 356, 401, 414, 419, 457, 465, 481, 484, 487, 489, 558, 561--563, 565, & 566 (1948), 3: 715, 763, 783, 810, 844, & 934 (1949), and 4: 997, 1046, 1100--1103, 1120, & 1205. 1949; Mold., Known Geogr. Distrib. Verbenac., ed. 2, 123, 152, & 158. 1949; Mold., Phytologia 4: 45. 1952; Mold. in Humbert, Fl. Madag. 174: 155, 237, 267, & 268. 1956; R. N. Parker, For. Fl. Punjab, ed. 3, 577. 1956; Mold., Résumé 155, 157, 158, 161, 208, 216, 264, 272, 273, 391, 392, & 450. 1959; Jacks. in Hook. f. & Jacks., Ind. Kew., imp. 3, 1: 561 (1960) and imp. 3, 2: 1219. 1960; Gerth van Wijk, Dict. Plantnames, imp. 2, 1: 335 (1962) and imp. 2, 2: 176, 177, & 619. 1962; Nair & Rehman, Bull. Nat. Bot. Gard. Lucknow 76: [1], 14, & 16. 1962; Hyland, U. S. Dept. Agr. Pl. Invent. 173: 4. 1969; Gerth van Wijk, Dict. Plantnames, imp. 3, 1: 335 (1971) and imp. 3, 2: 176, 177, & 619. 1971; Mold., Fifth Summ. 1: 260, 264, 265, 272, 345, 358, 446, 462, & 463 (1971) and 2: 732, 733, 866, & 971. 1971; Farnsworth, Pharmacog. Titles 7 (7): iii & 395. 1972; Poisson & al., Ann. Pharm. Franç. 30: 241--254. 1972; Hegnauer, Chemotax. Pfl. 6 [Chem. 21]: 670. 1973; Mold., Phytologia 28: 448. 1974; [Farnsworth], Pharmacog. Titles 7 Cum. Gen. Ind. [31]. 1975; Mold., Phytologia 31: 391 & 396 (1975), 34: 273 (1976), and 36: 38 & 39. 1977; Mold., Phytol. Mem. 2: 249, 252, 254, 259, 334, 349, 386, 387, 392, 461, & 537. 1980; Sivarajan & Manilal, Journ. Econ. Tax. Bot. 3: 814. 1982; H. N. & A. L. Mold. in Dassan. & Fosb., Rev. Handb. Fl. Ceyl. 4: 411 & 430--432. 1983; Mold., Phytologia 57: 483 (1985), 58: 181 & 189 (1985), and 59: 348, 349, & 463. 1986.

Illustrations: Hubert, Trav. Lab. Mat. Méd. Fac. Pharm. Paris 13: [Verb. Util. Mat. Méd.], pl. 5, fig. 5--8. 1921.

A low, bushy, much-branched, erect shrub or small tree to 3 m. tall, with rather straggly growth when not trimmed; branches quite twiggy, slender, gray, subterete or obscurely tetragonal, densely cinereous-puberulent, glabrescent in age, often prominently lenticellate; branchlets and twigs very slender, abbreviated, gray or

buff, acutely tetragonal, densely cinereous-puberulent; nodes often more or less partially annulate, those on larger branchlets marked with corky sterigmata 0.5--1.5 mm. long; principal internodes greatly abbreviated and only 1--9 mm. long on the twigs, to 8.5 cm. long on the larger branches; leaf-scars mostly elevated and conspicuously divergent, circular, corky-margined, not recurved nor spinescent; leaves decussate-opposite, approximate, or even ternate, often scattered, very numerous and crowded on the twigs; petioles varying from slender to filiform, 3--15 mm. long, very minutely puberulent or subglabrate, basally not at all ampliate; leaf-blades submembranous or very thinly chartaceous, rather uniformly bright-green on both surfaces or slightly lighter beneath, more or less brunnescent in drying, elliptic or lanceolate-elliptic to lanceolate, 1.1--9 cm. long, 1--3.6 cm. wide, apically acute or short-acuminate (rarely blunt) and apiculate, marginally entire or with 1 or 2 blunt lobe-like teeth above the middle or repand-dentate with widely separated, blunt, appressed teeth, basally acute or acuminate to cuneate, glabrate or subglabrate and densely punctate on both surfaces or very lightly pulverulent-puberulent on both surfaces when immature; inflorescence axillary, but aggregated near the tips of the twigs and appearing as though terminal, cymose, usually corymbose or corymbiform, 3--5 cm. long, 4--6 cm. wide, very lax, the cymes numerous, close together, decussate-opposite, mostly 2--4 cm. long and few-flowered, very loosely flowered, simple or 1 or 2 times dichotomous with a terminal flower in the center of each dichotomy, densely grayish-puberulent throughout; peduncles very slender or filiform, 1--3 cm. long, densely puberulent like the twigs; pedicels very slender or filiform, elongate, 3--19 mm. long, densely cinereous-puberulent, the longer pedicels usually on the central flower; bracts absent; bractlets and prophylla minute, inconspicuous, linear-subulate or setaceous, caducous, 1--3 mm. long, puberulent; calyx campanulate, brunnescent in drying, 2--4 mm. long and wide, externally very sparsely scattered-puberulous, its rim truncate and entire or subentire; corolla white, hypocrateriform, its tube narrow-cylindric, 4--11 mm. long, usually externally minutely pulverulent-puberulent or pubescent, hardly ampliate except at the extreme apex, the limb about 1 cm. in diameter in full anthesis, the 5 lobes subequal, oblong or obovate-oblong, 4--6 mm. long, 3 mm. wide, apically obtuse; stamens and style exerted 1 cm. or more from the corolla-mouth; filaments filiform; anther thecae oblong, parallel; style filiform, surpassing the stamens, 1.5 cm. long; pollen grains prolate, 61 μ x 42 μ (range 55--64 μ x 42 μ), the apocolpium diameter 12.8 μ ; stigma bifid, the lobes lanceolate; ovary 4-ovulate; fruiting-calyx slightly incrassate, cupuliform, to about 5 mm. long and 10 mm. wide, glabrescent, mostly irregularly split to the base when the fruit is ripe; fruit drupaceous, subglobose, white, nigrescent in drying, the size of a small cherry or about 7 mm. long and wide, glabrous, deeply sulcate, spongy, juicy.

This species, based on an unnumbered specimen from the Isle de France [Mauritius] in the Desfontaines herbarium in Paris, is native to the Mascarene Islands, but is cultivated in many places in

India, Europe, South Africa, and elsewhere, mostly as a hedge or as a specimen plant. In Australia it is widely used as a hedge. The pollen is described in detail by Nair & Rehman (1962), based on *NBG Dehra Dun 5675, slide 2659*.

Poiret's (1808) description and commentary about this species are as follows: "Cette espèce, qui croît à l'Isle-de-France, où elle a été recueillie par M. Bory de Saint-Vincent, dans les lieux arides, non loin des bords de la mer, forme un arbrisseau glabre, & même un peu glauque, dont le bois est tortu & maigre, dont les feuilles varient dans leur forme, les unes étant ovales, d'autres lancéolées, d'autres, surtout les supérieures, linéaires-lancéolées, glabres, entières, aiguës, sans nervures sensibles, excepté celle du milieu. Les fleurs sont nombreuses, inodores, laterales, axillaires, disposées en corymbe trichotome; le pédoncule & les pédicelles glabres, cylindriques, filiformes, à peine de la longueur des feuilles; le calice glabre, tubulé, campaniforme, à cinq dents peu sensibles; la corolle d'un blanc de lait; les fruits globuleux. Cet arbuste croît à l'Isle-de-France, dans les lieux arides. ♯ (V. s. in herb. Desfont.)"

Collectors have encountered this plant in dry rocky places, high forests, and dry scrub near freshwater springs, from sealevel to about 15 m. altitude, in flower in January. The corollas are described as "white" on *Barclay 1754, Clemens 43440 & s.n.*, and *White 12401* and by most authors except Poiret (1808) who describes them as "milky white". Baker (1877) reports the species from the "dry hills of the Pouce range, etc." on Mauritius and affirms that it also grows on Réunion. Andersson refers to it as a "common native shrub in the lowlands" of Mauritius, where another collector refers to it as "a shrub of no importance".

Sivarajan & Manilal (1982) report that *C. heterophyllum* "has been found growing abundantly in [Kerala, India, and in] many other parts of Malabar except Calicut. Very often it is grown on hedges". Parker (1924) observes of it: "Indigenous to the Mascarenes. Occasionally grown in gardens in the plains [of the Punjab]."

It should also be noted here that the only Sivarajan material I have seen appears to be, not the typical form, but *f. angustifolium* Mold.

The *Herb. Jard. Bot. Tananarive 2387*, cited below, is from material "perhaps planted" along the road from Mandraka to Tamtave in Madagascar.

Vernacular and common names reported for this species are "bois cabri", "bois cabril", "bois cabris", "bois chenilles", "bois de bouc", "bois de chemille", "bois de chenilles", "gros bois de chenilles", "various-leaved clerodendron", "various-leaved clerodendrum", and "volkamier hétérophylle".

Sweet (1826) and Loudon (1832) report that the species was introduced into cultivation in England in 1805 from Mauritius; Voigt (1845) found it already in cultivation in the Calcutta area in 1845.

Wallich's two binomials, in the synonymy (above), are based on *Wallich 1790C*, a collection from Mauritius deposited in the Madras herbarium. The *Clerodendron heterophyllum* credited to Miquel, in

the same synonymy, is a synonym of *Peronema canescens* Jack.

Baker (1877) distinguishes the *Clerodendrum* species known to him from the Mascarene and Seychelles Islands as follows (with modifications and nomenclatural updating by myself):

1. Inflorescence corymbose.

2. Calyx-teeth obscure; leaves variable, the blades basally cuneate.

3. Corolla-lobes obovate-oblong.....*C. heterophyllum*.

3a. Corolla-lobes obovate.....*C. laciniatum*.

2a. Calyx-teeth large; leaf-blades basally rounded-cordate.....

C. philippinum.

1a. Inflorescence a thyrsoid panicle.....*C. serratum*.

Wehmer (1931) also reports *C. heterophyllum* from both Mauritius and Réunion, where, he says, it is employed medicinally as an anti-syphilitic. It contains some ethereal oil, but no alkaloids nor glycosides.

Hyland (1969) cites U. S. Dept. Agr. Pl. Introd. no. 303641 cultivated in Maryland, but originally from Uttar Pradesh, India.

The cultivated specimen so determined in the University of Karachi herbarium may possibly be *C. emirnense* Bojer; *Tepin s.n.* in the Vienna herbarium is a mixture with *C. emirnense* var. *diffusum* Mold.; and the Herb. Richard collection in the Stockholm herbarium is a mixture with *Vitex negundo* var. *heterophylla* (Franch.) Rehd.

Material of *Clerodendrum heterophyllum* has been misidentified and distributed in some herbaria as *C. aculeatum* (L.) Schlecht., *C. inerme* (L.) Gaertn., "*C. inerme* R. Br. (sens. lat.)", *C. laciniatum* Balf. f., *C. ligustrinum* (Jacq.) R. Br., *C. splendens* G. Don, *C. tomentosum* (Vent.) R. Br., *Manabea* sp., *Volkamera ligustrina* Jacq., *Volkamera angustifolia* Lam., *V. angustifolia* Poir., *V. ligustrina* Jacq., and *Volkamera* sp.

On the other hand, the *G. Gardner s.n.* [Mauritius] and *Sieber Fl. Maurit. 311*, distributed as typical *C. heterophyllum*, are what I now regard as its f. *angustifolium* Mold., while *Herb. Crooke* [Garden of Baron von Ludwig] is *C. emirnense* var. *diffusum* Mold.

Clerodendrum heterophyllum is obviously very closely related to *C. angustifolium* (Poir.) Spreng., *C. ligustrinum* (Jacq.) R. Br., and *C. aculeatum* (L.) Schlecht. and probably also to *C. emirnense* Bojer.

Citations: MADAGASCAR: *Herb. Jard. Bot. Tananarive 2387* (P); *Tepin s.n.* [Herb. Reichenbach f. 134547 in part] (V). MASCARENE ISLANDS: Mauritius: *N. J. Andersson 7* (S), *8* (S); *C. Barclay 1754* (W--2769466); *G. Barclay s.n.* (K); *Commerçon 257* (P), *258* (P); *Herb. R. Brown s.n.* (L); *Herb. Buckley s.n.* (E--118940); *Herb. Cosson s.n.* (P); *Herb. Maurit. Bot. Gard. 39* (K); *Herb. Portenschlag s.n.* (V); *Herb. Roy. Bot. Gard. Pamplémousses 47* (Ld--photo, N--photo, Na--27838); *W. Hooker s.n.* (L); *Perrottet s.n.* [Maurice] (P); *Richard s.n.* [Ile de France] (P); *Sieber Fl. Maurit. II.158* (Br, K, L, L, L, L, Ld--photo, M, Mu--1684, N--photo, N--photo, P, V, V, V, V). RÉUNION: *Boivin 1239* (N, P); *Herb. Exp. Ser. For. Réunion 18547* (Lv); *Richard 217* (P), *256* (P), *496* (P), *s.n.* [Bourbon] (P, P). INDIA: Maharashtra: *H. R. Fernandez 2328* (Xa); *Herb. Blatter 15025* (Xa), *28390* (Xa). CULTIVATED: Australia: *Blackburn s.n.* (T); *M. S.*

Clemens 43440 (Mi); *Flecker* s.n. [Cairns, 29.6.1935] (Qu); *C. T. White* 12401 (N). Austria: *Herb. Hort. Schoenbrunn* s.n. [1811] (V); *Herb. Jacquin* s.n. [794] (V); *Herb. Mertens* s.n. [Hort. Bot. Vin-dob.] (L). Belgium: *Herb. Pollart de Canidri* s.n. (Br). France: *Collector undetermined* s.n. (Dc); *Hardy* s.n. [Malmaison, 9 Aout 1822] (L); *Herb. Hort. Paris* s.n. [1828] (Br), s.n. [Aout 1846] (Cb); *Perottet* s.n. [Jardin des Pl., Paris, 1818] (Cb); *Thuillier* s.n. [Hort. Paris 1821] (Cb, Cb); *Weinkampf* s.n. [Jard. des Plantes] (Mu-1401). Germany: *Herb. Braun* s.n. (L); *Herb. Hort. Berol.* s.n. (L, N, V); *Herb. Hort. Bot. Imp. Pet. Mag.* s.n. [Hort. Heidelb., 10 Jul. 1834] (L, N); *Herb. Schimper* s.n. (Mu--1400); *Herb. Schrader* s.n. (L); *Otto 1815* (B), s.n. [H. Berol.] (L). India: *Herb. Hort. Bot. Calcutt.* s.n. (Br, K, K, L, Mu--802, Ut--7393B); *Voigt* s.n. [H. B. Seramp.] (Cp, Cp); *Wallich* 557 (Cp, Cp, Dc), 1790/2 (L), s.n. [1830] (E--photo, K, Ld--photo, N--photo, S), s.n. [1832] (K), s.n. (Cp, Cp). Italy: *Herb. Harvey* s.n. [h. R. P. 1819] (Du); *Herb. Hort. Neapol.* s.n. [Nov. 1832] (Le). Russia: *Herb. Fischer* s.n. (L, L, L, L); *Herb. Hort. Bot. Imp. Pet. Mag.* s.n. [1835] (K, L, L); *Regel* s.n. [Herb. Bot. Petrop. 58.8] (L). Sri Lanka: *Collector undetermined* s.n. [Roy. Bot. Gard. Perad.] (Pd). LOCALITY OF COLLECTION UNDETERMINED: *Herb. Reichenbach f.* s.n. [S. Amer.] (V); *Herb. Richard* s.n. (S); *Mollian* s.n. [1834] (Br); *Petit-Thouars* s.n. (P).

CLERODENDRUM HETEROPHYLLUM f. *ANGUSTIFOLIUM* Mold., *Phytologia* 3: 315. 1950.

Synonymy: *Volkameria angustifolia* Andr., *Bot. Repos.* 9: pl. 554. Dec. 1808 [not *V. angustifolia* Poir., Aug. 1808, nor Lam., 1825].

Bibliography: Andr., *Bot. Repos.* 9: pl. 554. Dec. 1808; Mold., *Phytologia* 3: 315. 1950; Mold. in Humbert, *Fl. Madag.* 174: 155, 237, & 267. 1956; Mold., *Résumé* 157, 158, & 450. 1959; Mold., *Fifth Summ.* 1: 264 & 265 (1971) and 2: 866. 1981; Mold., *Phytologia* 36: 39. 1977; Mold., *Phytol. Mem.* 2: 252, 254, 259, 340, 349, & 537. 1980; H. N. & A. L. Mold. in Dassan. & Fosb., *Rev. Handb. Fl. Ceyl.* 4: 431. 1983; Mold., *Phytologia* 58: 189. 1985.

Illustrations: Andr., *Bot. Repos.* 9: pl. 554 (in color). 1808.

This form differs from the typical form of the species in having the leaf-blades linear, less than 10 mm. wide at the mid-point.

The form is based on an unnumbered G. Gardner collection from near Port Louis, Mauritius, deposited in the Kew herbarium, and is known definitely by me only from Mauritius and Réunion, where it is apparently native, but it has been introduced and become naturalized in parts of India and Australia.

Many herbarium specimens of typical *C. heterophyllum* (Vent.) R. Br. have this narrow-leaved form mounted on the same sheet with the ordinary broad-leaved form. They are, however, always on separate branchlets or twigs, so it is not at all clear whether they came from the same plant or not.

The *Volkameria angustifolia* credited to Lamarck and to Poirét in the synonymy (above) are synonyms of *Clerodendrum angustifolium* (Poir.) Spreng., which see.

Collectors have encountered *C. heterophyllum* f. *angustifolium* along roadsides (in Kerala, India), in flower in October, the corolla

described as "white" by Sivarajan. It is said by Clemens to be a common hedge plant in Queensland, Australia, and it is possible that all her material cited below from that country was actually from cultivated material. Her no. 44239 is a mixture with *Duranta repens* L. and the term "treelet" on her accompanying label may refer to either part of the material. She also refers to the corollas as "white" and found the plant in anthesis in April.

This form, as well as *C. heterophyllum* itself, is certainly closely related to *C. angustifolium* (Poir.) Spreng. Material has been misidentified and distributed in some herbaria as typical *C. heterophyllum* (Poir.) Spreng., *C. commersonii* Spreng., *C. neriifolium* Wall., and *Manabea* sp.

Citations: MASCARENE ISLANDS: Mauritius: N. J. Andersson s.n. [Mauritius] (S); G. Gardner s.n. [Mauritius] (K--type, Ld--photo of type, N--fragment of type, N--photo of type); Herb. Mus. Paris s.n. [Ile de France] (P); Richard s.n. [Ile de France] (P); Sieber Fl. Maurit. II.311 (L, Ld--photo, N--photo, V). RÉUNION: Desvieux 19 (P); Herb. Mus. Paris s.n. [Bourbon] (P); Richard s.n. [Bourbon] (P, P). INDIA: Kerala: Sivarajan 1228 (Ld, Uc). GREAT BARRIER REEF: Stradbroke: M. S. Clemens 44239 in part (Mi). CULTIVATED: Bribie Island: M. S. Clemens 44058 (Mi). Queensland: M. S. Clemens 42078 (Mi), s.n. [Nov. 21, 1945] (Or--53474). LOCALITY OF COLLECTION UNDETERMINED: Petit-Thouars s.n. (P).

CLERODENDRUM HETEROPHYLLUM var. BAUERI Mold., Phytologia 4: 127. 1952.

Bibliography: Mold., Phytologia 4: 127. 1952; Mold., Biol. Abstr. 27: 984. 1953; Mold., Résumé 208 & 450. 1959; Mold., Fifth Summ. 1: 345 (1971) and 2: 866. 1971; Mold., Phytol. Mem. 2: 334 & 537. 1980; H. N. & A. L. Mold. in Dassan. & Fosb., Rev. Handb. Fl. Ceyl. 4: 432. 1983.

This variety differs from the typical form of the species in having the calyx-rim distinctly toothed, the teeth short and triangular.

The variety is based on a series of drawings made from living plants at Keppel Bay, Queensland, Australia, by Ferdinand Lucas Bauer between 1801 and 1803 and deposited in the herbarium of the Naturhistorisches Museum in Vienna, drawing 968a being regarded by me as the actual type (holotype). One of the drawings was submitted to the Royal Botanic Gardens at Kew where Dr. R. Melville studied it. His report to me is that it does not match any material in the Kew herbarium of any known Australian species. He thinks that the plant depicted by Bauer may have been a hybrid between "*C. hemiderma*" [now known as *Glossocarya hemiderma* (F. Muell.) Benth.] and *C. floribundum* R. Br. It seems more likely to me that it represents a variety of the very variable *C. heterophyllum* (Vent.) R. Br. with whose broad-leaved typical form it agrees almost perfectly in all characters except the plainly short-toothed calyx-rim.

Citations: AUSTRALIA: Queensland: F. L. Bauer icon 968a (Ld--photo of type, N--photo of type, V--type), 968/969 (V), 1591/1 (V).

CLERODENDRUM HETTAE H. Hallier, Meded. Rijks Herb. Leid. 37: 82--83. 1918.

Synonymy: *Clerodendron hettiae* Hall. f. apud H. J. Lam, Verbenac. Malay. Arch. 316. 1919. *Clerodendron speciosissimum* f. *macrocalyx* Bakh. ex Mold., Résumé 269 in syn. 1959.

Bibliography: H. Hallier, Meded. Rijks Herb. Leid. 37: 82--83. 1918; H. J. Lam, Verbenac. Malay. Arch. 316 & 363. 1919; Bakh. in Lam & Bakh., Bull. Jard. Bot. Buitenz., ser. 3, 3: 77, 94, 109, & ix. 1921; A. W. Hill, Ind. Kew. Suppl. 6: 49. 1926; Beer & Lam, Blumea 2: 224. 1936; B. Thomas, Engl. Bot. Jahrb. 68: [Gatt. Clerod.] 20. 1936; Mold., Known Geogr. Distrib. Verbenac., ed. 1, 66 & 90. 1942; H. N. & A. L. Mold., Pl. Life 2: 57. 1948; Mold., Known Geogr. Distrib. Verbenac., ed. 2, 147 & 181. 1949; Mold., Résumé 197, 269, & 450. 1959; Mold., Fifth Summ. 1: 330 & 456 (1971) and 2: 866. 1971; Mold., Phytol. Mem. 2: 320 & 537. 1980; H. N. & A. L. Mold. in Dassan. & Fosb., Rev. Handb. Fl. Ceyl. 4: 446. 1983; Mold., Phytologia 58: 216 (1985) and 59: 340. 1986.

A shrub, 1--2 m. tall, mostly quite glabrous; branches stout, 3.5--7 mm. in diameter, glabrous, the younger ones terete and green, the older ones woody, obtusely tetragonal, fistular, ochraceous, dark, verruculose with orbicular lenticels; leaves decussate-opposite, large; petioles 3.5--30 cm. long, terete, glabrous, slightly longitudinally sulcate-flattened between 2 parallel ridges above; leaf-blades chartaceous, obcordate or the upper ones ovate, equaling or shorter than the petiole, 9--28 cm. long, 7--20 cm. wide, apically acutely short-acuminate, marginally entire, basally rather deeply and widely cordate, green above, much paler beneath, glabrous on both surfaces (except for the venation), pinnately and basally subpalmately veined, under a handlens squamulose-punctulate throughout above, minutely glandular-punctate beneath and especially along the larger venation sparsely marked with larger discoid glands; secondaries 7 or 8 per side, irregular, subclathrate, arcuately joined near the margin, otherwise semi-pinnate, papillose-puberulous on both surfaces; inflorescence terminal, paniculate, very showy, fastigiate, glabrous, the ramifications decussate, terminating in 2 many-flowered cincinni beneath the central flower; bractlets small, spatulate-linear, about 1 cm. long, 1--2 mm. wide; pedicels subclavate, 2--8 mm. long, much shorter than the calyx; calyx large, membranous or subchartaceous, pale-green or reddish to orange-red, during anthesis 1.8--2.5 cm. long and 1.2--1.7 cm. wide, irregularly parallel-veined, externally glabrous, glandular-punctulate throughout and also punctate with a few larger glands, trifid to about 1/3 down, the lobes ovate, unequal, 2 of them (the anterior ones?) much broader and apically acute or sometimes apically minutely bidentate, the third one acuminate; corolla hypocrateriform, red or orange-red to flesh-color, glabrous, the tube 2.5--3.3 cm. long, half longer than the calyx, basally slender and cylindrical, 2 mm. in diameter, but amplified apically to 3 mm. and there narrowly infundibular, the lobes oblong, 2--2.5 cm. long and 1--1.1 cm. wide, apically obtuse or subacute; stamens inserted in the upper part of the corolla-tube, about 2.5 cm. long, exerted, slightly surpassing the corolla-lobes;

anthers oblong, 3.5 mm. long, the lower $\frac{1}{2}$ divaricate; style exerted 2.2--2.7 cm.; stigma shortly bifid; fruiting-calyx somewhat accrescent, fleshy, patulous, blood-red; fruit drupaceous, globose, 6 mm. long, 6--7 mm. wide, included by the fruiting-calyx, externally glabrous, 4-lobed.

This species is based on *Elbert 644, 776, 1814, 1914, 1946, & 1978* from Lombok, in the Lesser Sunda Islands, at 150--900 m. altitude, in flower and immature fruit in April and June, deposited in the Senckenberg, Buitenzorg, and Leiden herbaria. The collector notes that in April in one case the apparently ripe fruit had already been devoured by birds. Hallier (1918) also comments that "Zur selben Art gehört offenbar auch *Zollinger no. 2557 ZM z. Theil* ('in collibus ins. Lombok, VII.1846'), im Hb. L.-B. aber nur mangelhaft vertreten. Ich benenne die Pflanze, die vielleicht von allem Arten der Gattung die schönsten und grössten Blüten besitzt, an Ehren der Frau Dr. Hetta Elbert, die ihren Gatten auf allen seinen Streifzügen über die kleinen Sunda-inseln und durch New-Kamerun als getreue Mitarbeiterin begleitet hat".

Beer & Lam (1936) remark that this species "shows in its calyx and corolla some relations to *Faradaya*", and that it is related closely to *C. elberti* H. Hallier and *C. brassii* Beer & Lam.

Iboet describes the corollas as "red", while Bloembergen refers to them as "orange-red". The plant has been found in anthesis in February, April, and June.

Bakhuizen's *C. speciosissimum* f. *macrocalyx* seems to be based on *Iboet 297* from Soemba.

Citations: LESSER SUNDA ISLANDS: Lombok: *Bloembergen 2023* (Bz--72640, Bz--72641); *A. Ernst s.n.* [29.III.06] (Bz--19373, N); *Rensch-Maler 90* (Bz--19375, Bz--19376, Bz--19377); *Voogd 2074* (Bz--19374, Ld--photo, N--photo). Soemba: *Iboet 297* (Bz--20591).

CLERODENDRUM HEXANGULATUM Thomas, Engl. Bot. Jahrb. 68: [Gatt. Clerod.] 102--103. 1936.

Synonymy: *Clerodendron hexangulatum* Berthold Thomas apud Hill & Salisb., Ind. Kew. Suppl. 10: 55. 1947.

Bibliography: B. Thomas, Engl. Bot. Jahrb. 68: [Gatt. Clerod.] 13, 40, 70, 93, & 102--103. 1936; Mold., Known Geogr. Distrib. Verbenac., ed. 1, 47 & 90. 1942; Hill & Salisb., Ind. Kew. Suppl. 10: 55. 1947; Mold., Known Geogr. Distrib. Verbenac., ed. 2, 113 & 181. 1949; Mold., Résumé 139 & 450. 1959; Mold., Fifth Summ. 1: 223 (1971) and 2: 866. 1971; Mold., Phytol. Mem. 2: 214 & 537. 1980.

A scandent shrub; branches hexangular, subglabrous, spinose; branchlets rounded-hexangular, hispid; leaves ternate; petioles 0.5--1.5 cm. long, hirsute or glabrous, articulate, the lower 2 cm. recurved, spinescent, the upper portion deciduous; leaf-blades membranous, obovate-rotund, 5--9 cm. long, 3--6 cm. wide, apically acuminate (the acumen itself apically subobtuse), marginally entire, basally rotundate-cuneate, glabrous above, pubescent beneath; inflorescence cymose-paniculate, often foliose, composed of axillary cymes, with elongate sympodia, including the uppermost leaves which notably decrease in size or sometimes are all bract-like, the axil-

lary cymes ternate, aggregate, the lower ones 2--2.5 cm. long; peduncles to 1 cm. long; pedicels 1--3 mm. long; bracts and bractlets small, subulate, hispidulous; calyx narrowly conic-tubular, almost cylindrical, 7--8 mm. long, externally hispidulous-pubescent, 5-dentate to about 1/5 the length, the teeth acutely deltoid; corolla-tube about 1.6 cm. long, basally and apically dilated, the limb 4- or 5-lobed, bilabiate, the lobes ovate-oblong, subequal, about 3 mm. long, reclinate; stamens exerted; filaments about 2.2 cm. long, subequal, inserted at about 2/3 the length of the corolla-tube; anthers 1 mm. long; style about 1.8 cm. long; stigma bifid, the lobes 1 mm. long; ovary 1.5 mm. long, dark-fuscous, externally glabrous; mature fruit not known.

This species is based on *Mildbraed 5423* from "im grossen Dscha-Bogen", Lomie district, in the South Cameroons forest area, collected on May 23, 1911, and deposited in the Berlin herbarium, now probably destroyed. Thomas (1936) cites also *Tessmann 2758* from the Cameroons.

Nothing is known to me of this species beyond what is stated in its meager bibliography (above).

CLERODENDRUM HILDEBRANDTII Vatke, *Linnaea* 43: 536--537 [as "*Clerodendron*"]. 1882; B. Thomas, *Engl. Bot. Jahrb.* 68: [Gatt. *Clerod.*] 67 & 93. 1936.

Synonymy: *Clerodendron hildebrandtii* Vatke, *Linnaea* 43: 536. 1882. *Clerodendrum hildenbrandia* Jaasund, in herb.

Bibliography: Vatke, *Linnaea* 43: 536--537. 1882; Jacks. in Hook. f. & Jacks., *Ind. Kew.*, imp. 1, 1: 561. 1893; Gürke in Engl., *Pflanzenw. Ost-Afr. C.* 341. 1895; J. G. Baker in *Thiselt.-Dyer, Fl. Trop. Afr.* 5: 294 & 302--303. 1900; Chiov., *Result. Scient. Miss. Stef.* 1: 143. 1916; Chiov., *Fl. Somala* 1: 63 (1929) and 2: 362. 1932; B. Thomas, *Engl. Bot. Jahrb.* 68: [Gatt. *Clerod.*] 6, 7, 21, 38, 67, & 93. 1936; Worsdell, *Ind. Lond. Suppl.* 1: 238. 1941; Mold., *Known Geogr. Distrib. Verbenac.*, ed. 1, 49, 50, & 90. 1942; Jacks. in Hook. f. & Jacks., *Ind. Kew.*, imp. 2, 1: 561. 1946; Glover, *Prov. Check List Brit. Ital. Somal.* 266. 1947; Mold., *Alph. List Cit.* 2: 537. 1948; H. N. & A. L. Mold., *Pl. Life* 2: 64. 1948; Mold., *Known Geogr. Distrib. Verbenac.*, ed. 2, 116, 117, & 181. 1949; Mold., *Résumé* 144, 145, & 450. 1959; Jacks. in Hook. f. & Jacks., *Ind. Kew.*, imp. 3, 1: 561. 1960; Dale & Greenway, *Kenya Trees Shrubs* 582 & 584. 1961; Cuf., *Bull. Jard. Bot. Brux.* 32: *Suppl.* 799. 1962; Mold., *Résumé Suppl.* 13: 4 (1966) and 15: 8. 1967; Gillett, *Numb. Check-list Trees Kenya* 46. 1979; Mold., *Fifth Summ.* 1: 235, 239, 240, & 251 (1971) and 2: 866. 1971; Mold., *Phytol. Mem.* 2: 204, 225, 229, 230, 240, & 537. 1980; Reis & Lipp, *New Pl. Sources Drugs* 251. 1982; Mold., *Phytologia* 53: 197 (1983), 57: 34 (1985), 59: 254 & 259 (1986), and 60: 138. 1986.

Illustrations: Chiov., *Fl. Somala* 2: 362. 1932.

A moderate to large bush, much-branched shrub, or tree, to 10 m. tall, rather succulent, often growing in groups; stems single or many, green, smooth; branches laxly spreading, striate, glabrous; bark rough, corrugated, pale-brown, finely reticulate; branchlets

woody, tetragonal, pale, glabrous; sap colorless; leaves decussate-opposite, thick and somewhat fleshy when fresh, "sticky" [fide Tanner], brittle when dry, long-petiolate; petioles 4--4.7 cm. long, glabrous; leaf-blades membranous, broadly oval or ovate to broadly elliptic, 5--6.5 cm. long, 5--7 cm. wide, marginally entire, basally rounded to subcordate or the lowermost cordate, pale dull-green on both surfaces, thick and fleshy when fresh, glabrous on both surfaces; cymes axillary, long, very open, pedunculate, 3-flowered, forming a few-flowered terminal panicle, surpassing the leaves; peduncles about 2 cm. long; pedicels very slender, to 1 cm. long, often longer than the calyx; flowers regular, very large, odorless or aromatic (depending on the time of day?); calyx tubular-subcampanulate, 0.8--1.2 cm. long, green but basally tinged dull-purplish, 5-dentate or -lobed, externally glabrous, the teeth or lobes ovate, red-tinged, much shorter than the tube, apically acute; corolla hypocrateriform, white or cream-color, tinged mauve when fading, the tube slender, slightly curvate, 2.5--3 cm. long, about 3 times as long as the calyx, apically dilated, externally sparsely pilose, the limb about 1.5 cm. wide, the lobes subequal, 0.8--1.2 cm. long; stamens twice as long as the corolla-tube; filaments apically pink or mauve, basally white; anthers pale-brown or brown-red; pollen yellow; style pink or white, apically mauve or reddish; fruiting pedicels subincurved; fruit drupaceous, globose, at first green, later black, shiny, enclosed by the fruiting-calyx when immature, unpleasantly aromatic; seeds oblong, glabrous.

This species is based on *Hildebrandt 2389* from Ndara in Teita, in south-southeastern Ethiopia, collected in February, 1877. Vathek (1882) comments about it: "*C. trifloro* Vis. (fide Schweinfurth ms.) simile, foliis integerrimis in petiolum haud decurrentibus diversam. In systemata schaueriano ad *Euclerodendron* §1. pertinet."

Collectors have encountered this plant in secondary forests, woodlands, bushland, and thickets, on river flats, in regenerating cultivated areas, by hot springs, in coppices, at the edges of forest patches and thickets, in light forests, on tree savannas dominated by *Acacia* and herb savannas dominated by *Digitaria*, *Echinochloa*, and *Panicum*, and in heavy black fissuring soil or rich, red, brown, or black loam, as well as in gray sandy-clay areas periodically inundated, at 10--600 m. altitude, in flower in February, April to June, November, and December, and in fruit from June to September and November.

Polhill & Paulo found it growing "on sandy soil in disturbed bush around cultivation with *Adansonia*, *Lannea*, *Sterculia*, *Markhamia*, *Grewia*, *Thespesia*, *Allophylus*, etc." in Kenya. In Tanganyika Schlieben reports it "scattered" or "common", while Drummond & Hemsley describe it as "scattered in shrub thickets on shrub- and small-tree grasslands". Gürke (1895) refers to it in East Africa as "Sowohl auf feuchten Grassflächchen am Meeresstrande, als auch im lichten Gebüsch, überall häufig, wie es scheint".

The corollas are described as "white" by Baker (1900) and on Drummond & Hemsley 3533, Peter 16608, Proctor 2587, Schlieben 2546, Tanner 2568, 2903, 3412, 3473, 3767, & 3788, "pure-white" on

Faulkner 597, "milk-white" by Gürke (1895) and Vatke (1882), "dirty-white" on Peter 15148, "cream" on Drummond & Hemsley 3037, "cream, tinged mauve when fading" on Polhill & Paulo 743, "yellow" on Barbosa 2393, "blue" on Tanner 3328, and "violet" on Tanner 3103 [I suspect that the last two of these are errors in observation and/or in transcription for fruit color].

Vernacular names reported for *C. hildebrandtii* are "kuwakilo", "kuwkilo", "kwakiyo", "mbwakaba", "mbwakabaka", "mkormudo", "mkua-usiku", "mkula-usiku". "mkusakilo", "mkuwakilo", "mpewa", and "mtozatoza".

Chiovenda (1916) records *C. hildebrandtii* from what was then Italian Somaliland. Dale & Greenway (1961) assert that it occurs in bush and grassland in the Coast Province of Kenya, citing Battiscombe 33 & 462, Graham 2165 & 2311, Hildebrandt 2389, and Kirk s.n. Tanner (1982) cites Tanner 3412 & 3767; Cufodontis (1962) cites only Hildebrandt 2389, giving the plant's distribution as both sides of the Juba River in Ethiopia and also in "Tropical Africa".

Baker (1900) cites from Kenya Hildebrandt 2389, Kirk s.n., and Wakefield s.n. and from Tanganyika Hannington s.n. and Holst 2000.

Thomas (1936) cites from Kenya Hildebrandt 2389, Kirk s.n., Thonner 21 & II.82, and Wakefield s.n. and from Tanganyika Braun 1512, 1791, 3411, & 3487, Goetze 77, Hildebrandt 1270, Holst 1253a & 2200, Merker 725, Schlieben 5725 & 6007, Stuhlmann 6, 117, 6955, 8041, & I.578, and Zimmermann 149.

Tanner informs us that the roots of this plant are boiled and the resulting decoction is then drunk to treat heartburn and stomach ache. Graham says that the leaves are pounded and "used as fish bait" [fish stupification poison?].

Keys to help distinguish this species from other African taxa will be found in the present series of notes under *C. dinklagei* Hürke [59: 254] and *C. discolor* (Klotzsch) Vatke [59: 259].

It may be worth mentioning that the Barbosa 2393, cited below, is a good match for Hildebrandt 1270 in the British Museum herbarium, while Torre & Paiva 9613 was examined by Sir George Taylor, who reports in a personal communication to me, dated June 13, 1966, that "this gathering compares well with the copious Kenya and Tanganyika material present in the Kew herbarium".

The Tanner 1664, distributed as *C. hildebrandtii*, actually is the type collection of its var. *pubescens* Mold., which see.

Citations: TANZANIA: Tanganyika: K. Braun s.n. [A. Peter 51803] (B), s.n. [A. Peter 51868] (B); Drummond & Hemsley 2353 (B, S), 3037 (B, S), 3533 (B, S); H. G. Faulkner 597 (S); Holst 2203 (Mu--1743); Jaasund 2153 (Go); Merker 725 (B); A. Peter 13709 [O.III.182] (B), 15148 [O.III.243] (B), 16608 [O.IV.49] (B), 20457 [O.IV.187] (B), 20577 [O.IV.191] (B), 20702 [O.IV.192] (B), 23682 [O.IV.310] (B), 24899 [O.IV.343] (B), 40550 [V.241] (B); Proctor 2587 (W--2892774); Schlieben 2546 (Br, N, S), 5725 (Br), 6007 (Br, Ld--photo, N--photo); Tanner 2568 (Ba, Mi, N), 2923 (Ba, Ca--180713, N, S), 3328 (Ba, Mi, N), 3412 (Ba, Mi, N), 3474 (Ba, N), 3767 (Ba, Mi, N), 3788 (Ba); Zimmermann s.n. [A. Peter 13982; O.III.194] (B). Zanzibar: Hildebrandt 1270 (L, Ld--photo, N, N--photo, V); Tanner 3103

(Ba, N). KENYA: R. M. Graham 2165 (Af); Napier 6329 (Br, N); Polhill & Paulo 743(S); Thomas 11.82 ["Thonner 11.82"] (Br, N); Wall B. 5993 (Ew). MOZAMBIQUE: Cabo Delgado: Torre & Paiva 9613 (Ul). Moçambique: Barbosa 2393 (Ul).

CLERODENDRUM HILDEBRANDTII var. *PUBESCENS* Mold., Phytologia 53: 197. 1983.

Bibliography: Mold., Phytologia 53: 197. 1983.

This variety differs from the typical form of the species in having the stems, branches, petioles, peduncles, pedicels, calyx, and lower leaf-surfaces densely short-pubescent.

The variety is based on *Tanner 1664* from black loam in grass around a grove of palms along the Sereneta River, Banagi area, Ikoma Chiefdom, Musomi District, in the Serengeti National Park, Lake Province, Tanzania, at 4500 feet altitude, collected on November 4, 1953, and deposited in the University of Michigan herbarium. The collector describes the plant as growing in groups 3 feet tall, the stems hollow, single, erect, the sap colorless, the flowers aromatic and the corollas white.

Thus far the variety is known to me only from the original collection, but its general resemblance to *C. rotundifolium* Oliv., with which it has previously been confused, is remarkable. It deserves further study. *Egglesing 6823* probably represents the same taxon.

Citations: TANZANIA: Tanganyika: *Tanner 1664* (B--isotype, Ba--isotype, Mi--type).

CLERODENDRUM HIRICINUM Schau. in A. DC., Prodr. 11: 661 [as "*Clerodendron*"]. 1847; Mold., Geogr. Distrib. Avicenn. 37. 1939.

Synonymy: *Clerodendron hircinum* Schau. in A. DC., Prodr. 11: 661. 1847. *Webera axillaris* Lyall ex Mold. in Humbert, Fl. Madag. 174: 244 in syn. 1956.

Bibliography: Schau. in A. DC., Prodr. 11: 661. 1847; Buek, Gen. Spec. Syn. Candoll. 3: 106. 1858; Jacks. in Hook. f. & Jacks., Ind. Kew., imp. 1, 1: 561. 1893; Briq. in Engl. & Prantl, Nat. Pflanzenfam., ed. 1, 4 (3a): 175. 1895; Mold., Geogr. Distrib. Avicenn. 37. 1939; Mold., Known Geogr. Distrib. Verbenac., ed. 1, 53, 72, & 90. 1942; Jacks. in Hook. f. & Jacks., Ind. Kew., imp. 2, 1: 561. 1946; Mold., Alph. List Cit. 1: 31 & 36 (1946) and 3: 685 & 917. 1949; Mold., Known Geogr. Distrib. Verbenac., ed. 2, 123, 158, & 181. 1949; Mold., Biol. Abstr. 26: 145. 1952; Mold., Phytologia 4: 45. 1952; Mold. in Humbert, Fl. Madag. 174: 149, 155, 244--248, 266, & 267, fig. 40 (1--5). 1956; Mold., Resumé 155, 216, 393, & 450. 1959; Jacks. in Hook. f. & Jacks., Ind. Kew., imp. 3, 1: 561. 1960; Mold., Fifth Summ. 1: 260 & 358 (1971) and 2: 735 & 866. 1971; Fournet, Fl. Illust. Phan. Guad. 1418. 1978; Mold., Phytol. Mem. 2: 249, 349, & 537. 1980; Mold., Phytologia 58: 181 & 190. 1985.

Illustrations: Mold. in Humbert, Fl. Madag. 174: 247, fig. 40 (1--4). 1956.

A shrub or small tree, 1--4 m. tall, or high-climbing liana; stems and branches rather slender, obtusely tetragonal, very densely short-pubescent with flavidous or fulvous spreading hairs, less so

in age, not very twiggy; branchlets slender, obscurely tetragonal or subterete, densely short-pubescent with brown spreading hairs or puberulent, becoming less so in age or even glabrescent; nodes not annulate; principal internodes 1.5--6 cm. long; leaf-scars mostly very prominent, sometimes 2--8 mm. long and curved in spine-like fashion; leaves decussate-opposite or approximate; petioles slender, 0.3--2.5 cm. long, rather densely short-pubescent like the branches or somewhat less so, with spreading brown hairs, usually the basal 1--4 mm. persisting as a spine-like, divergent or recurved projection (or sometimes these spines are replaced by large, flattened, corky-margined leaf-scars); leaf-blades usually membranous, sometimes chartaceous or even very firm and stiff, uniformly green on both surfaces or bright-green above and lighter beneath, mostly fragile when dry, shiny, varying from elliptic to obovate-elliptic or obovate, 1.5--19 [usually 4.5--10] cm. long, 1--11.5 [usually 2--5] cm. wide, apically mostly short-acuminate or cuspidate, more rarely acute to rounded or even emarginate, marginally mostly entire or subentire or with a few undate-sinuate or sinuate-dentate leaves interspersed among the entire ones, basally acute or shortly subacuminate, sparsely pilosulous above when young, becoming densely pustulate-puberulent, often more or less strigillose along the venation above when mature and often also sparsely strigillose on the lamina as well, varying from densely short-pubescent throughout beneath to merely puberulent-strigillose along the venation or pilosulous and punctate; midrib slender, flat above, prominent beneath; secondaries slender, 5--9 per side, arcuate-ascending, rather irregularly arcuate-joined near the margins beneath, flat (or subprominulous on heavy leaves) above, prominulous or subprominulous beneath; vein and veinlet reticulation rather abundant, fine, the larger parts often slightly subprominulous above, varying to obscure or even indiscernible on thinner leaves, all flat or prominulous beneath, often obscure; inflorescence axillary and terminal, cymose, the very numerous cymes usually aggregated at the tips of the branches and forming an elongated panicle to 20 cm. long and 8.5 cm. wide; cymes mostly divaricate-ascending, solitary, opposite or often supra-axillary by several mm., 2.5--7 cm. long, many-flowered, rather loose, 2--5 cm. wide, densely puberulent throughout; peduncles slender, compressed, 1--6 cm. long, very densely short-pubescent with spreading fulvous or flavidous hairs like the many sympodia and cyme-ramifications; pedicels slender, 1--5 mm. long, densely flavidous-pubescent; bracts often large and foliaceous in the terminal panicle, resembling the leaves in all respects but smaller, subtending the uppermost cymes, caducous; bractlets linear, 2--5 mm. long, very densely yellowish-pubescent; prophylla setaceous, about 1 mm. long, densely yellowish-pubescent or puberulent; calyx broadly campanulate, lightly chartaceous, 4--6 mm. long, 3--9 mm. wide, externally more or less puberulent, not at all nigrescent in drying, its rim deeply 5-lobed, the lobes triangular-ovate, stramineous or yellowish, often as long as the tube, apically attenuate-subacuminate; corolla hypocrateriform, white or greenish-yellow, its tube narrow-cylindric, 7--9 mm. long, externally glabrate or apically very sparsely puberulent, the limb 5-lobed,

the lobes about 3 mm. long, apically obtuse, dorsally densely short-pubescent; stamens and style exerted 4--5 mm. from the mouth of the corolla-tube, glabrous; fruiting pedicels slender, to 11 mm. long, densely short-pubescent with yellowish or fulvous spreading hairs; fruiting-calyx incrassate, campanulate, the tube 6--7 mm. long and wide, puberulent but less so apically, the lobes ovate, about 3 mm. long and wide, slightly puberulent; fruit drupaceous, oblong-subglobose, blue, about 8 mm. long and wide, nigrescent, plainly sulcate, externally glabrous.

This endemic Madagascan species is based on an unnumbered Bojer collection from the Ermin region of Madagascar, deposited in the De Candolle Herbarium in Geneva. Schauer (1847) comments: "Affinis et similis *C. putri*, sed pube, calyce et corollâ valde distincta. 'Planta odore gravissimo praepollens'. Folia in nostra bipollicaria, complicata. Calyx in limbum conspicue dilatatus, 2 lin. longus. Cor. infundibularis, 4 lin. longa. Genitalia exserta."

The ultimate large dimensions given in my description (above) for the leaf-blades are taken from the obovate leaves mounted with *Chapelier 91*, but it is not certain that these detached leaves actually belong to the *C. hircinum* specimen; they differ not only in their large size, obovate shape, and in being brunnescent above and densely pubescent beneath, but also in the character of the whole venation on both leaf-surfaces.

Clerodendrum hircinum is endemic to Madagascar, but is known from cultivation in Martinique and possibly also in France (and perhaps elsewhere). Collectors have encountered it in forests and cloud-forests, in rich alluvium, and on gneiss laterite, at 50--2500 m. altitude, in flower in May, June, July, and September, and in fruit in August.

The corollas are described as having been "white" on *Decary 14334*, *14347*, & *17910*, *Gentry 11654*, *Humbert & Swingle 4836*, and *Perrier 16435*, "pure-white" on *Viguiér & Humbert 202*, and "greenish-yellow" on *Goudot s.n.*

The *Bélanger 195* collection from Martinique, cited below, does not actually have any indication on its label that it came from cultivated material, but I am assuming that it did.

Material of *C. hircinum* has been misidentified and distributed in some herbaria as *Volkameria* sp. or even as something in the *Rubiaceae*.

A key to distinguish this species from its relatives in Madagascar will be found in the present series of notes under *C. baronianum* Oliv. [58: 190].

Citations: MADAGASCAR: *Afzelius s.n.* [Tamatave, 22.8.1912] (S); *Baron 2531* (K, P), *2752* (K, P); *Boivin 1798* (P), *s.n.* [Madagascar, 1847--1852] (P); *Bréon 3* (P); *Catat 1707* (P); *Chapelier 91* (P); *Decary 4795* (P), *5383* (P), *7064* (P), *14334* (P), *14347* (N, P), *17910* (P); *A. Gentry 11654* (E--2737590); *Goudot s.n.* [environs de Tamatave, Aout 1830] (P); *Herb. Hooker s.n.* [July 1832] (K); *Herb. Jard. Bot. Tananarive 2798* (P); *Herb. Mus. Paris s.n.* [Exposition Coloniale de Marseille] (P); *Humbert & Swingle 4836* (P); *Humblot 70* (P); *Lants s.n.* [16 Mai 1881] (N, P); *Lyall 392* (K, Ld--photo, N--photo),

394 (K, Ld--photo, N, N--photo); *Richard s.n.* [Madagascar] (P); *Perrier 10184* (P), *12596* (P), *16435* (P); *Scott-Elliott 2122* (K); *Viguiier & Humbert 202* (P). CULTIVATED: Martinique: *Bélanger 195* (Ld--photo, N--photo, P, S--photo).

CLERODENDRUM HIRCINUM f. *DENTATUM* Mold., Amer. Journ. Bot. 38: 325. 1951.

Bibliography: Mold., Amer. Journ. Bot. 38: 325. 1951; Mold., Biol. Abstr. 26: 185. 1952; Mold. in Humbert, Fl. Madag. 174: 149, 247, 248, & 267, fig. 40 (5). 1956; Mold., Résumé 155 & 450. 1959; Mold., Fifth Summ. 1: 260 (1971) and 2: 866. 1971; Mold., Phytol. Mem. 2: 249 & 537. 1980; Mold., Phytologia 58: 186. 1985.

Illustrations: Mold. in Humbert, Fl. Madag. 174: 247, fig. 40 (5). 1956.

This form differs from the typical form of the species in having its leaf-blades quite regularly sinuate-dentate along the margins with mostly irregularly disposed, coarse, apically sharp or rounded, ovate, often lobe-like teeth from the base to the apex or merely above the middle.

The form is based on *Bélanger 111* from somewhere in Madagascar, deposited in the Paris herbarium by way of the Moquin-Tandon, Cosson, and Durand herbaria.

Collectors have encountered this plant in forests, referring to it as a scattered small shrub, 0.5 m. tall, with leaves that "stink", and with white corollas, in flower in November. It is possible that this is merely a juvenile form of the species.

Citations: MADAGASCAR: *Bélanger 111* (E--photo of type, F--photo of type, Ld--photo of type, N--photo of type, P--type); *Chapelier s.n.* [Madagascar] (P); *Forsyth Major 41* (K); *Herb. Mus. Paris s.n.* (N, P); *Schlieben 8068* (Ca--1169869, Mu).

CLERODENDRUM HISPIDUM M. R. Henderson, Gard. Bull. Straits Settl. 7: 118--119, pl. 29 [as "*Clerodendron*"]. 1933; Mold., Known Geogr. Distrib. Verbenac., ed. 1, 60 & 90. 1942.

Synonymy: *Clerodendron hispidum* M. R. Henderson, Gard. Bull. Straits Settl. 7: 118. 1933.

Bibliography: M. R. Henderson, Gard. Bull. Straits Settl. 7: 118-119, pl. 29. 1933; A. W. Hill, Ind. Kew. Suppl. 9: 68. 1938; Mold., Known Geogr. Distrib. Verbenac., ed. 1, 60 & 90 (1942) and ed. 2, 138 & 181. 1949; Mold., Résumé 179 & 450. 1959; Mold., Résumé Suppl. 3: 20. 1962; Mold., Dansk Bot. Arkiv 23: 89. 1963; Mold., Fifth Summ. 1: 295 & 304 (1971) and 2: 866. 1971; Mold., Phytol. Mem. 2: 284, 295, & 537. 1980; Mold., Phytologia 50: 252. 1982.

Illustrations: M. R. Henderson, Gard. Bull. Straits Settl. 7: pl. 29. 1933.

A shrub, about 1--1.5 m. tall; branchlets terete, densely yellow-hispid, finely longitudinally ridged when dry; leaves decussate-opposite; petioles stout, 3--8 cm. long, densely hispid, often longitudinally ridged when dry; leaf-blades chartaceo-membranous, to 24 cm. long and 10 cm. wide, elliptic or oblong or the broadest part occasionally above the middle, apically long-acuminate, marginally

rather irregularly sinuate-dentate or subentire, basally rounded or very shallowly cordate (sometimes attenuate), hispid on both surfaces, brunnescent or nigrescent-brunnescent above in drying, usually paler beneath; midrib distinct but not prominent above, more densely hispid, prominent beneath; secondaries 7 or 8 pairs, more densely hispid than the lamina, rather indistinct above, prominent and distinct beneath, the basal pair usually arising at a more acute angle with the midrib than the others, the next 3 or 4 pairs usually almost straight and then gently curving along the margin, the uppermost pair issuing from the midrib more obtusely, often almost at right angles, then curving abruptly upwards, the looped intramarginal vein usually indistinct; tertiaries transverse, distinct below, distant, more or less horizontal, the reticulations loose and rather faint; inflorescence terminal, paniculate, thyrsoid, pyramidal, to 25 cm. long, densely yellow-hispid; bracts foliaceous, progressively smaller upwards; inflorescence ramifications 1.5--2.5 cm. apart, about 1.2--2 cm. long; cymes trichotomous, rather densely flowered; peduncles with dense multicellular hairs; pedicels usually 0.5--1.2 cm. long (occasionally shorter), apically thickened, with dense multicellular hairs; bracts and bracteoles long-linear, subulate; calyx campanulate, 10--11 mm. long, deeply lobed, the lobes ovate-lanceolate, 8--9 mm. long, apically acute, externally with very long, stiff, multicellular hairs especially on the venation and margins, ventrally glabrous, 5-veined; corolla-tube cylindric, about 13 mm. long, basally ampliate to about 2.7 mm., apically about 1.6 "mm." wide, externally scabrid-puberulent (except basally), internally shortly and sparsely glandular-hairy, the lobes oblong or subobovate, subequal, about 4.5 mm. long and 3 mm. wide, apically rounded, the middle lobe of the lower lip somewhat narrower than the others and apically subacute, ventrally glabrous, dorsally densely hispid-pubescent; filaments exerted, slender, about 13 mm. long, glabrous; anthers ovate, about 1.6 mm. long and 0.6--0.7 mm. wide, apically blunt; style slender, about 2 cm. long, glabrous; stigma bilobed, the lobes slender, about 1 mm. long, subulate, tapering; ovary rounded, externally glabrous, shallowly lobed.

The species is based on *Henderson 25085* from a lowland forest near the limestone hill called Bukit Sagu, Kuantan district, Pahang, Malaya. Henderson (1933) comments that it is probably related to *C. langkawiense* King & Gamble "sed ramis pubescentibus pilis longis, foliis multo latioribus, hispidis, petiolis longioribus, calyce maiore, tubo corollae multo brevior differt". He asserts that the type collection was collected in anthesis in October, the fruit unknown, and the corolla yellow and calyx red-hairy.

Collectors describe this plant as a shrub or undershrub, 1--1.5 m. tall, the branches long and slender, the bark light-brown, the petioles hairy, the leaf-blades dull dark-green and hairy above, hairy on the green venation beneath but otherwise purple, the inflorescence axillary and terminal, paniculate, the cymes 2--5-flowered, the calyx dark reddish-brown or purple, red-hairy, pentamerous, the corolla with the "petals spreading to form a half-moon" [*fide* Congdon], the stamens 4, the filaments white, elongate, curved,

the anthers dark-brown, the style long-exserted, and the stigma bifid.

The corolla is described as "white" on *Congdon 139* and *Hansen & Smitinand 11955*, "cream-color" on *Smitinand 3082*, and "yellow" on *Henderson 25085* and *Sinclair 8221*.

Collectors have encountered the plant in evergreen hillside forests, at 1--1000 m. altitude, in flower in January, October, and November, and in fruit in November. Smitinand reports it "scattered in evergreen forests" in Thailand, where Congdon found it to be "common in grassy fields". In Malaya Sinclair refers to it as "rare along forest paths".

Citations: THAILAND: *Congdon 139* (Ac), 952 (Ac); *Hansen & Smitinand 11842* (Cp), 11955 (Cp); *K. Larsen 8572* (Ld); *Smitinand 3082* (Bk--17404, Ld). MALAYA: Pahang: *M. R. Henderson 25085* (Bz--19378--isotype, Ld--photo of isotype, N--fragment of isotype, N--photo of isotype, W--photo of type). Trengganu: *Sinclair 8221* (W--2912698).

CLERODENDRUM HIULCUM Mold., *Lloydia* 13: 205--206. 1950.

Bibliography: Mold., *Lloydia* 13: 205--206. 1950; E. J. Salisb., *Ind. Kew. Suppl.* 11: 56. 1953; Mold. in Humbert, *Fl. Madag.* 174: 154, 228--230, & 267, fig. 37 (1 & 2). 1956; Mold., *Résumé* 155 & 450. 1959; Mold., *Fifth Summ.* 1: 260 (1971) and 2: 866. 1971; Mold., *Phytol. Mem.* 2: 249 & 537. 1980; Mold., *Phytologia* 58: 189. 1985.

A small tree, 3--7 m. tall; trunk diameter 15--20 cm.; branchlets and twigs medium-slender, obtusely tetragonal, compressed at the nodes on the younger parts, often conspicuously lenticellate with close prominent lenticels on the older parts, very densely short-pubescent or puberulent with brownish hairs, much less so or even glabrescent on the older parts in age; nodes often more or less annulate; principal internodes 1--4 cm. long; leaves decussate-opposite, brunnescenscent in drying; petioles slender, 8--19 mm. long, canaliculate above, densely puberulent throughout; leaf-blades membranous, somewhat lighter beneath, elliptic, 5--8 cm. long, 2--4 cm. wide, apically acute or shortly acuminate, marginally entire, basally acute, lightly puberulent above, densely puberulent beneath; midrib slender, flat or subcanaliculate above, prominent beneath; secondaries slender, 4--8 per side, arcuate-ascending, flat above, prominent beneath; veinlet reticulation usually obscure or indiscernible above, only the largest parts subprominulous beneath; inflorescence mostly terminal or with a few pairs of cymes in the uppermost leaf-axils, loosely many-flowered, about 3 times dichotomous, very densely puberulent or short-pubescent throughout with brownish hairs; peduncles slender, 1--2 cm. long; pedicels very slender, 2--5 mm. long; foliaceous bracts often present in pairs at the base of the inflorescence-branches, mostly 1 cm. long or less; bractlets linear, 2--3 mm. long; calyx campanulate, 8--9 mm. long, 5--6 mm. wide, mostly 10-costate, densely puberulent, brunnescenscent in drying, its rim 5-lobed, the lobes triangular-ovate, about 3 mm. long, apically attenuate-acute; corolla hypocrateriform, rosy-white, the tube vivid-rose in color, very slender, about 2 cm. long or slightly less, externally very minutely pulverulent above the calyx or sub-

glabrescent, the limb white, about 1 cm. wid; stamens exerted about 1 cm. or slightly more from the corolla-mouth; pistil about equaling the stamens, glabrous; fruiting-calyx and fruit not known.

This species is based on *Decary 5065* from quartzite in a forest at Ifandana, in Farafangana Province, Madagascar, collected on September 8, 1926, and deposited in the Paris herbarium. The vernacular name, "fotsivone", is recorded for it.

A key to help distinguish this species from other Madagascan species of the genus will be found under *C. baronianum* Oliv. in the present series of notes (58: 189).

Citations: MADAGASCAR: *Decary 4897* (N, P), *5065* (E--photo of type, F--photo of type, Ld--photo of type, N--photo of type, P--type).

CLERODENDRUM HOLTZEI F. Muell., Journ. Roy. Soc. N. S. Wales 24: 75 [as "*Clerodendron*"]. 1891; Mold., Known Geogr. Distrib. Verbenac., ed. 1, 69 & 90. 1942.

Synonymy: *Clerodendron holtzei* F. Muell., Journ. Roy. Soc. N. S. Wales 24: 75. 1891. *Clerodendron holtzei* Bleeser ex L. S. Sm., Contrib. Queensl. Herb. 6: 20. 1969.

Bibliography: F. Muell., Journ. Roy. Soc. N. S. Wales 24: 75. 1891; Durand & Jacks., Ind. Kew. Suppl. 1, imp. 1, 101 (1901) and imp. 2, 101. 1941; Mold., Known Geogr. Distrib. Verbenac., ed. 1, 69 & 90. 1942; H. N. & A. L. Mold., Pl. Life 2: 65. 1948; Mold., Alph. List Cit. 2: 482 & 557 (1948) and 3: 761. 1949; Mold., Known Geogr. Distrib. Verbenac., ed. 2, 152 & 181. 1949; Durand & Jacks., Ind. Kew. Suppl. 1, imp. 3, 101. 1959; Mold., Résumé 148, 208, 264, & 450. 1959; L. S. Sm., Contrib. Queensl. Herb. 6: 20. 1969; Chipendale, Proc. Linn. Soc. N. S. Wales 96: 256. 1971; Mold., Fifth Summ. 1: 247, 345, 446, & 462 (1971) and 2: 866. 1971; T. B. Muir, Muelleria 2: 166. 1972; Mold., Phytol. Mem. 2: 237, 334, & 537. 1980.

This species based on *Holtze 109* from the vicinity of Port Darwin, Northern Territory, Australia, collected between December 1890 and February 1891.

McGregor encountered what has been thought to be this plant growing between massive granite boulders and refers to it as a tree, 40 feet tall, the trunk 8 inches in diameter at breast height. It seems obvious, however, that this material needs further study. It seems most highly unlikely that a northern Australian species would also occur naturally in Zimbabwe or that it would grow as a 40-foot tree there! Mueller's original (1891) description of *C. holtzei* is: "Pendent or prostrate or diffuse, much beset with short spreading hairlets; leaves comparatively small, almost sessile, from cordate to rhomboid-orbicular, above nearly glabrous; peduncles terminal and from the axils of the upper leaves, bearing cymously [sic] from three to several flowers; bracteoles narrow, very short; flowers rather small; calyx cleft to near the middle, finally somewhat enlarging, but without succulence, its lobes acute; corolla pure white, outside beset with minute hairlets, its tube nearly doubly as long as the calyx, at the orifice bearing soft hairlets, its lobes from ovate to orbicular, about half as long as the tube; stamens hardly extending beyond the corolla-lobes; anthers ellipsoid-sagittate."

[to be continued]